UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
NATIONAL MARINE FISHERIES SERVICE
Northwest Region
7600 Sand Point Way N.E., Bldg. 1
Seattle, WA 98115

Refer to:
OSB2000-0239

September 14, 2000

Mr. Lawrence C. Evans
U.S. Army Corps of Engineers
Portland District, CENWP-CO-GP
P.O. Box 2946
Portland, Oregon 97208-2946

Re: Dooher Bar Gravel Extraction and Bank Protection on Kilchis River, Tillamook County, Oregon (Corps No. 1999-01126)

Dear Mr. Evans:

Enclosed is a biological opinion prepared by the National Marine Fisheries Service (NMFS) pursuant to section 7 of the Endangered Species Act (ESA) on the Dooher Bar Gravel Extraction and Bank Protection Project near Tillamook, Oregon. The NMFS concludes in this biological opinion that the proposed action is not likely to jeopardize Oregon Coast coho salmon or destroy or adversely modify critical habitat. Pursuant to section 7 of the ESA, NMFS has included reasonable and prudent measures with non-discretionary terms and conditions that NMFS believes are necessary and appropriate to minimize the potential for incidental take associated with this project.

The applicant has proposed to conduct gravel removal activities on an annual basis. The NMFS finds information insufficient to evaluate impacts to the watershed for such activities, and has consulted on the removal of gravel in the year 2000 only. Subsequent proposals will be evaluated as described in the attached biological opinion on a comprehensive watershed basis.

Questions regarding this letter should be directed to Rob Markle of my staff in the Oregon State Branch Office at (503) 230-5419.

Sincerely,

Russell M. Strach for

William Stelle, Jr.
Regional Administrator

Endangered Species Act

Section 7 Consultation

Biological Opinion

Dooher Bar Gravel Extraction and Bank Protection on the Kilchis River,
Corps No. 1999-01126,
Tillamook County, Oregon

Agency: U.S. Army Corps of Engineers, Portland District

Consultation Conducted By: National Marine Fisheries Service,
Northwest Region

Date Issued: September 14, 2000

Refer to: OSB2000-0239

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I. BACKGROUND

The U.S. Army Corps of Engineers (Corps) requested formal consultation on the proposed issuance of a permit under Section 10 of the Rivers and Harbors Act and Section 404 of the Clean Water Act (Corps No. 1999-01126) in a letter dated August 4, 2000. NMFS received the request for consultation and a biological assessment describing the proposed action on August 8, 2000. The proposed permit would allow gravel extraction and bank protection on the Kilchis River at river mile (RM 0.9). The ReBob Farms, Inc. has applied for the subject permit. Nehalem Marine is a co-applicant.

The Kilchis River discharges flows to the Tillamook Bay. The subject reach is leveed on the north bank and experiences diurnal tidal flooding. The State of Oregon recognizes this area as tidal estuary. Gravel deposition has occurred at the proposed action site in recent years following a 1997 moratorium on gravel removal activities in the watershed. Gravels on-site appear to contain a high percentage of fines, reportedly associated with an active landslide located approximately 0.5 miles upstream. The ReBob Farm dairy is located adjacent to the gravel deposition site. The June 2000 high water event breached the adjacent levee resulting in flooding of the ReBob Farm barn and pasture. The applicant believes removal of the gravels will reduce erosion pressure on the opposite bank and alleviate problematic flooding.

In general, the NMFS has not advocated gravel removal due to insufficient information regarding the impacts associated with the practice. For this reason the NMFS has expressed the intention to consult on proposed gravel removal on a watershed scale following comprehensive study. NMFS policy (NMFS National Gravel Extraction Policy, D. Packer, principal author) directs that individual excavation actions must be judged in the "context of their spatial and temporal cumulative impacts; i.e., potential impacts to habitat should be viewed from a watershed management perspective." To this end NMFS believes a comprehensive gravel extraction plan for the Kilchis River watershed is needed prior to endorsing wide-spread gravel removal from the system. However, due to the limited scope of the proposed action and in sensitivity to the stated need, NMFS is willing to consider the effects of the proposed action at Dooher Bar as a single independent action with the understanding that additional gravel removal actions within the watershed will be consulted upon as a whole.

This biological opinion (Opinion) considers the potential effects of the proposed action on Oregon Coast (OC) coho salmon (*Oncorhynchus kisutch)*, which occur in the proposed project area. OC coho salmon were listed as threatened under the Endangered Species Act (ESA) on August 10, 1998 (63 FR 42587), and critical habitat was designated on February 16, 2000 (65 FR 7764). NMFS concludes that the proposed action is not likely to jeopardize the subject species, or destroy or adversely modify designated critical habitat. Included in this Opinion is an incidental take statement with terms and conditions to minimize the take of the subject species. This consultation is conducted pursuant to section 7(a)(2) of the ESA and its implementing regulations, 50 CFR 402.

II. PROPOSED ACTION

The action proposes to bar scalp up to 2,000 cubic yards (cy) of gravel and associated fines from the Kilchis River at RM 0.9. Excavation will occur within a 0.7 acre (30,000 sq ft) area along a 400-foot reach of the river. The depth of excavation will vary to allow downstream sloping of the substrate to

prevent fish entrapment. The applicant estimates 250 cy of gravel will be removed daily, which would require eight work days to remove the targeted 2,000 cy. The excavated material will be used to mend and fortify the landward side of the existing levee on the applicant's property.

Excavation will be accomplished using an excavator and dump trucks. Work will occur in the dry to the greatest extent possible by working during low-tide events. The downstream end of the work site will be excavated first with work proceeding upstream. Access to the gravel bar is provided by an existing access road.

Sitka spruce trees will be secured to the south bank to protect the bank from further erosion. The applicant proposes to place eight trees complete with limbs attached along an approximately 200-foot length of bank. The trees will be secured using buried 3/4-inch cable fastened to subgrade deadmen. No estimate was provided for excavation quantities associated with the cabling effort. The applicant indicates a narrow bucket will be used to bury the cable, which will minimize the soil disturbance area.

The applicant proposes to perform mitigation plantings along a 450-foot section of the south bank immediately opposite the excavation site, and a 50-foot section along the north levee bank upstream of the excavation site. Plantings will consist of willow (*Salix* sp.), black cottonwoods (*Populus balsamifera*), and Sitka spruce (*Picea sitchensis*). A combination of local stock willow stakes and posts will be planted from the ordinary high water mark up to the top of the bank. Willow stakes will be planted on 3-foot centers, while willow posts will be planted on 6-foot centers. The planting depth for willow posts will be at least 2-feet. Black cottonwoods will be planted from the top of bank to a distance of 5-feet from the bank edge along an irregular line at approximately 6-foot centers. The cottonwood posts will be at least 4-feet long and four-inches wide, and planted to a minimum depth of 2-feet. From the line of cottonwoods for a distance of 15 feet inland, 4-foot tall Sitka spruce trees will be planted on a spacing of 20 feet. All plantings will occur between February 15 and April 15, 2001. The applicant proposes to maintain the plantings for three years and insure an 80 percent survival. Maintenance will include removal of invasive exotic plant species (Himalayan blackberry, Japanese knotweed, etc.). A 700-foot fence will be erected to exclude livestock from the mitigation area.

The proposed project includes the following set of best management practices (BMPs) designed to reduce adverse environmental impacts. These BMPs will be followed on all activities associated with the permitted action and will be provided to the project contractor. The NMFS regard these BMPs as integral project components and consider them to be part of the proposed action.

1. All work will occur during the Oregon Department of Fish and Wildlife (ODFW) authorized work period of late-August to early-September. This is an exception to the November 1 to February 15 recommended in-water work window to allow work to occur during the dry season and minimize the presence of migrating and spawning OC coho salmon at the project site. The exact dates of work will be determined in cooperation with ODFW (Chris Knutsen).

2. Work will occur during low-tide events to minimize wet excavation.

3. Equipment will be fueled away from the river.

4. All disturbed soils above the water line will be seeded with native ryegrass.

III. BIOLOGICAL INFORMATION AND CRITICAL HABITAT

Although there are currently limited data to assess population numbers or trends, NMFS believes that all coho salmon stocks comprising the OC coho salmon Evolutionarily Significant Unit (ESU) are depressed relative to past abundance. The status and relevant biological information concerning OC coho salmon are well described in the proposed and final rules from the Federal Register (60 FR 38011, July 25, 1995; and 63 FR 42587, August 10, 1998, respectively), and Weitkamp *et al.* (1995).

Abundance of wild coho salmon spawners in Oregon coastal streams declined during the period from about 1965 to roughly 1975 and has fluctuated at a low level since that time (Nickelson *et al*. 1992). Spawning escapements for this ESU may be at less than 5 percent of abundance from that in the early 1900s. Contemporary production of coho salmon may be less than 10 percent of the historic production (Nickelson *et al*. 1992). Average spawner abundance has been relatively constant since the late 1970s, but preharvest abundance has declined. Average recruits-per-spawner may also be declining. The OC coho salmon ESU, although not at immediate danger of extinction, may become endangered in the future if present trends continue (Weitkamp *et al*. 1995).

Timing of adult coho salmon river entry is largely influenced by river flow. Coho salmon normally wait for fall freshets before entering rivers. In the Kilchis River watershed, adults return between September and January (Telephone conversation with C. Knutsen, ODFW, 29 June 2000). OC coho salmon spawn in the Kilchis River basin between early-November and mid-December with peak spawning occurring in mid-November (Weitkamp *et al*. 1995). Juvenile coho salmon rear for one year in freshwater before migrating to the ocean. Coho salmon spawning and juvenile rearing generally take place in small low gradient (generally less than 3 percent) tributary streams (Floyd 2000). Coho salmon prefer cool water temperatures of 53^0 F to 58^0 F, with 68^0 F as maximum for rearing (Reeves *et al*. 1989). Juvenile OC coho salmon migrate out of the Kilchis River basin as smolts between March and May (Telephone conversation with C. Knutsen, ODFW, 29 June 2000).

Releases of out-of-basin stock coho salmon have occurred sporadically in the Kilchis River. More than 1,541,000 fry and age-1 juveniles were released between 1936 and 1982 (Weitkamp *et al*. 1995). Stocks released include Big Creek, Bonneville, Klaskanine, Nehalem, Nestucca, and Trask. The majority (81 percent) consisted of stocks originating from within the Oregon Coast ESU. The last out-of-ESU stock coho salmon planting within the Kilchis Basin occurred in 1959.

Critical habitat for OC coho salmon includes Oregon coastal river basins (freshwater and estuarine areas) between Cape Blanco and the Columbia River. Freshwater critical habitat includes all waterways, substrates, and adjacent riparian areas below longstanding, natural impassable barriers (i.e., natural waterfalls in existence for at least several hundred years) and several dams that block access to former coho salmon habitat. Riparian areas include areas adjacent to a stream that provide the following functions: shade, sediment, nutrient or chemical regulation, streambank stability, and input of large woody material (LWM) or organic matter. The proposed action would occur in designated critical habitat for OC coho salmon.

IV. EVALUATING PROPOSED ACTIONS

The standards for determining jeopardy are set forth in section 7(a)(2) of the ESA as defined by 50 CFR Part 402 (the consultation regulations). In conducting analyses of habitat-altering actions under section 7 of the ESA, the NMFS uses the following steps: 1) Consider the status and biological requirements of the species; 2) evaluate the relevance of the environmental baseline in the action area to the species' current status; 3) determine the effects of the proposed or continuing action on the species; 4) consider cumulative effects; and 5) determine whether the proposed action, in light of the above factors, is likely to appreciably reduce the likelihood of species survival in the wild or adversely modify its critical habitat. In completing this step of the analysis, NMFS determines whether the action under consultation, together with all cumulative effects when added to the environmental baseline, is likely to jeopardize the continued existence of the listed species or result in destruction, adversely modify their critical habitat, or both. If NMFS finds that the action is likely to jeopardize the listed species, NMFS must identify reasonable and prudent alternatives for the action.

A. Biological Requirements

The first step in the methods NMFS uses for applying the ESA section 7(a)(2) to listed salmon is to define the biological requirements of the species most relevant to each consultation. NMFS also considers the current status of the listed species taking into account population size, trends, distribution and genetic diversity. To assess the current status of the listed species, NMFS starts with the determinations made in its decision to list OC coho salmon under the ESA and also considers new data available that are relevant to the determination (Weitkamp *et al*. 1995).

The relevant biological requirements are those necessary for OC coho salmon to survive and recover to naturally reproducing population levels at which protection under the ESA will become unnecessary. Adequate population levels must safeguard the genetic diversity of the listed stock, enhance their capacity to adapt to various environmental conditions, and allow them to become self-sustaining in the natural environment.

For this consultation, the biological requirements are habitat characteristics that function to support successful spawning, rearing, and migration. The current status of the OC coho salmon, based upon their risk of extinction, has not significantly improved since the species was listed and, in some cases, their status may have worsened.

B. Environmental Baseline

The environmental baseline is an analysis of the effects of past and ongoing human and natural factors leading to the current status of the species or its habitat and ecosystem within the action area. The action area is defined as all areas to be affected directly or indirectly by the Federal action and not merely the immediate area involved in the action (50 CFR 402.02). Direct effects occur at the project site and may extend upstream or downstream based on the potential for impairing fish passage, hydraulics, sediment and pollutant discharge, and the extent of riparian habitat modifications. Indirect affects may occur throughout the watershed where actions described in this Opinion lead to additional activities or affect ecological functions contributing to stream degradation. For this consultation, the action area includes the affected streambed, bankline, adjacent riparian zone, and aquatic areas that

may be affected by increased turbidity during construction in the Kilchis River, including affected reaches of the Squeedunk Slough and Tillamook Bay.

The bulk of production for the OC coho salmon ESU is skewed to its southern portion where the coastal lake systems (e.g. Tenmile, Tahkenitch, and Siltcoos Basins) and the Coos and Coquille Rivers are more productive. The proposed action area is located in the northern half of the ESU where production is more depressed and habitat in the action area is underseeded.

OC coho salmon are known to spawn in the Kilchis River, and use the river for rearing. The Kilchis Watershed Analysis (Follansbee & Stark 1998) states returning adult coho salmon where estimated at "all-time lows" in Sam Downs Creek during the late 1980's and early 1990's, using peak escapement counts. An ODFW survey of the subject reach performed in August 2000 found two juvenile coho salmon in a debris jam located approximately 0.9 miles downstream of the work site at RM 0 (Telephone conversation with C. Knutsen, ODFW, 25 August 2000). The same survey established that juvenile salmonids (steelhead, cutthroat, and chinook) were present throughout the subject reach, including the pool located immediately downstream of the proposed work site.

The Kilchis River watershed drainage area is estimated to be 65 square miles (Follansbee & Stark 1998). The watershed is characterized as a steep sloped (commonly in excess of 70 percent), temperate rainforest with a lower reach comprised of a shallow gradient alluvial fan. The alluvial fan commences at RM 5 and includes the proposed project site. The Kilchis River originates in the coastal mountains of the Tillamook State Forest below Triangulation Point (3,294 feet) and flows approximately 20 miles to Tillamook Bay. In addition to the main Kilchis River channel, a significant volume of the Kilchis River flows to the Tillamook Bay via Squeedunk Slough. A channel connects the Kilchis River to Squeedunk Slough at approximately RM 0.3.

Vegetation within the Kilchis River watershed consists predominately of coniferous forested uplands and vegetation deficient lowland pasture. Riparian areas within the watershed have been identified as poor or degraded, with only 14 percent rated as possessing good quality on both banks (Follansbee & Stark 1998). A series of fires between 1933 and 1951 have burned much of the natural vegetation within the watershed. Upland riparian areas were revegetated predominately by alders. The banks of the subject reach are largely vegetated with alder, willows, Reed's canary grass, and blackberry thickets. Pastureland is present beyond the immediate bank and levee.

The Kilchis River was once well connected to floodplains "due to large logjams in the tidal area that reduced the capacity of the river channel to transport flood flows" (Follansbee & Stark 1998). Annual flooding of the lowlands provided beneficial habitat for juvenile coho salmon. Agricultural land use development in the floodplains currently place associated agriculture structures at risk of inundation each year. Levees and flood control activities designed to protect agricultural lands strive to prevent annual inundation of this habitat and limit fish access. Approximately 86 percent of wetlands within the greater Tillamook basin have been converted to agricultural use or developments (Follansbee & Stark 1998).

Channelization of rivers and the construction of levees have increased transport of sediments to Tillamook Bay (Follansbee & Stark 1998). Historically, sediments were largely deposited on the

floodplains. Much of the structural diversity of the bay has been lost as a result of sedimentation of the bay and the large wood removal.

Winters are typified as mild and wet, while summers are cool and relatively dry. Air temperatures measured at Tillamook range from an mean minimum of 41^0 F to an mean maximum of 59^0 F (1948 to 1999; WRCC 2000). The mean annual precipitation for the Kilchis Basin is 136 inches (463,000 acre-ft; Follansbee & Stark 1998). Most precipitation in the region occurs as rain, with approximately 76 percent of the annual average falling from October through March (Follansbee & Stark 1998).

Streamflow data collected by the Oregon Water Resources Department for the Kilchis River is suspected to be errant (Follansbee & Stark 1998). Estimates based on adjacent river systems indicated a mean annual flow of 430 cfs. Follansbee and Stark (1998) estimate the February 1996 flood peak for the Kilchis River had a 10-year recurrence interval. Follansbee & Stark (1998) explained the peak flood recurrence interval in the following way.

> A flood magnitude given a 100-year recurrence interval does not mean that a flood of this magnitude will occur only once in 100 years. Statistically speaking, it means that the flood magnitude has a 1% chance of being equaled or exceeded in any given year. Practically speaking, it means that over the life of a 30-year mortgage, the odds of property within the 100-year floodplain boundary being flooded are greater than 26%, or at least 1 in 3.

Locally severe bank erosion has been observed in the Kilchis River lowlands. Active streambank erosion in the lower river has been estimated at 29 percent (Follansbee & Stark 1998). This is thought to be the result of deficient riparian vegetation. Combined with livestock access to the stream channel and instream gravel mining, the loss of riparian vegetation can result in the loss of bank stability (Follansbee & Stark 1998).

Gravel mining has occurred in the Kilchis River deposition zone since the 1940's (Follansbee & Stark 1998). Gravel mining has a wide range of affects on the stream channel and fish habitat values. Follansbee & Stark (1998) state: "These impacts are the most disruptive when the gravel harvest is occurring in-channel, including bar-scalping as done on the Kilchis." For a list of potential affects to habitat and salmon, refer to Chapter 3: Stream Channel of the *Kilchis Watershed Analysis* (Follansbee & Stark 1998). As of 1997, gravel extraction has ceased as a result of a gravel moratorium until the effects on chum salmon are investigated. The establishment of gravel plugs in the lower Kilchis River in recent years may have been a result of this reduction of bedload removal. An erosion problem near RM 5 in the winter of 1997/1998 was attributed to the development of a gravel plug. The Kilchis Watershed Analysis identifies the need to establish a channel migration zone to allow natural channel meander and erosion to occur (Follansbee & Stark 1998). Associated with the development of such a zone, a monitoring program is recommended to track meandering and gravel deposition. The analysis further suggests information collected through monitoring could be used to determine if gravel should be removed, as well as to develop any extraction guidelines (Follansbee & Stark 1998).

Shallow translational (debris) slides from steep slopes typify the majority of Kilchis watershed landslides. Such slides are relatively small in size typically being approximately 130 cy of material, though some may begin as small as 10 cy and accumulate mass during downslope movement. Debris

slides typically contain large amounts of soils in addition to rock and organics. Landslides and surface erosion increased significantly following the fires in the first half of the century and subsequent salvage logging. Road development in the watershed is believed responsible for the majority of landslides in the watershed. During the winter of 1995/1996, an estimated 57 road-related landslides occurred in the Kilchis watershed (Follansbee & Stark 1998). Thirty-nine of which entered, or may have entered, stream channels delivering and estimated 5,400 cy of material. The majority of the slides were the result of road fill material failure.

Streams in the Kilchis basin typically lack adequate riparian communities and large woody material. The result is a reduction in habitat complexity and stream shading in basin streams. The Kilchis Watershed Analysis (Follansbee & Stark 1998) identified the need for riparian plantings, both for shade and streambank stabilization, along many miles of stream sections.

The subject reach of the Kilchis River is listed on the Oregon Department of Environmental Quality (ODEQ) 303(d) List of Water Quality Limited Water Bodies for not meeting the temperature and bacteria criteria. In the lower watershed, this is attributed to deficiencies in riparian vegetation in agricultural areas (Follansbee & Stark 1998).

V. ANALYSIS OF EFFECTS

A. Effects of Proposed Actions

Water quality (temperature, sediment and chemical contamination) will be affected by the proposed gravel-bar scalping action.

Water Quality

a. Temperature

Bar scalping may widen the channel and decrease water depth during low-flow periods resulting in increases in insolation heating. Proper streambed sloping during excavation and reconfiguration by winter flows are anticipated to alleviate concerns of excessive shallowing.

No removal of riparian vegetation will occur and therefore no reduction of shading will result of the proposed action. Proposed riparian plantings along the south bank should assist in the re-development of functional shading of the reach within 20 to 30 years. This represents a net improvement over the existing conditions.

b. Sediment

The Kilchis River and Squeedunk Slough will experience short-term releases of sediment due to disturbance of the streambed, including excavation in the wet. An increase in turbidity can impact fish and filter-feeding macro-invertebrates downstream of the work site. Fine sediment introduced into a water body can cause turbidity. Moreover, excavation may cause sediment already within the channel or bed of a water body to move into the water column and increase turbidity. The material proposed

for excavation is known to possess a high fines content. At moderate levels, turbidity has the potential to adversely affect primary and secondary productivity; at higher levels, turbidity may interfere with feeding and may injure and even kill both juvenile and adult fish (Spence *et al*. 1996).

To minimize the potential for stream turbidity and direct impacts to fish, work will occur between August 15 and September 30. During this period, river flows are typically low, fish presence is reduced, and rainfall is minimal. In addition, work will occur only during low-tide events. Low flows and low-tide excavation will allow a majority of the work to occur in the dry, thereby reducing indirect (turbidity) and direct impacts to fish. Fish presence is minimal with rearing juveniles potentially present, but no adult spawning or egg incubation occurring. The lower probability of rainfall reduces the likelihood that sediment will be transported into the river. Based on data provided by the Western Regional Climate Center (2000) for Tillamook, average rainfall during the anticipated work period (September) represents 4 percent of the annual (3.5 inches). A four to twelve percent probability of receiving 0.5 inches of rainfall exists on any given day during the proposed work period. The precipitation probability increases greatly after September 30, as does the potential presence of returning adult coho salmon.

No work isolation methods are currently proposed. The work site will be exposed to tidal inundation twice daily and any substantial increase in river base flow. Downstream, as well as tidal upstream reaches will be exposed to suspended solids. Of particular concern is the pool immediately downstream of the work site, which is known to be utilized by anadromous fish during this proposed work period. NMFS expects releases of sediment during streambed excavation activities to be limited by the work timing.

c. Chemical Contamination

As with all construction activities, accidental release of fuel, oil, and other contaminants may occur. Operation of the back-hoes, excavators, and other equipment requires the use of fuel, lubricants, and other operating fluids, which, if spilled into the channel of a water body or into the adjacent riparian zone, can injure or kill aquatic organisms. Herbicides used to clear vegetation may be used in riparian areas, where they may enter water bodies. Petroleum-based contaminants (such as fuel, oil, and some hydraulic fluids) contain polycyclic aromatic hydrocarbons (PAHs) which can cause acute toxicity to salmonids at high levels of exposure and can also cause chronic lethal as well as acute and chronic sublethal effects to aquatic organisms (Neff 1985). Similarly, exposure to herbicides can have lethal and sublethal effects on salmonids, aquatic invertebrates, aquatic vegetation, as well as target and non-target riparian vegetation (Spence *et al*. 1996).

Agricultural use of floodplains and subsequent inundation during flood events results in elevated levels of chemical and bacterial contamination of waterways. Such contamination affect the biota of downstream ecosystems and potentially juvenile coho salmon exposed to this environment. Inundation of the pasturelands adjacent to the project site has not been described as recurrent.

B. Effects on Critical Habitat

The NMFS designates critical habitat based on physical and biological features that are essential to the listed species. Essential features of designated critical habitat include substrate, water quality, water quantity, water temperature, food, riparian vegetation, access, water velocity, space and safe passage. The proposed action area will occur within designated critical habitat for OC coho salmon.

The proposed action will disturb in-stream habitat in the short and long term through substrate excavation and channel modification. Activities associated with the proposed action may introduce sediment and turbidity into downstream waters, alter and destabilize the streambed locally and offsite, and alter stream hydraulics and channel characteristics critical to properly functioning salmonid habitat. The following are some potential impacts gravel removal may have on critical habitat:

1. Disruption of instream sediment transport;
2. Upstream bed erosion (headcutting);
3. Downstream bed erosion (incision);
4. Loss of spawning gravel (inhibiting production);
5. Widening of the flow channel creating a shallower river channel with subsequent warming;
6. Exposure of imbedded fines with resultant redistribution downstream;
7. Increased suspended material and turbidity;
8. Loss of riparian vegetation (plants on bars and removal to provide access);
9. Loss of large woody debris (stranded);
10. Loss of benthic invertebrates;
11. Toxic spills in river from machinery;
12. Loss of side channel habitat;
13. Decreased light penetration;
14. Mechanical disturbance of redds;
15. Freshly exposed gravels (after scalping) are hydraulically unstable;
16. Change in flow velocity and erosion/deposition potential; and
17. Modification to the sinuosity of the river.

Bar scalping creates a wide flat cross section, then eliminates confinement of the low flow channel, and results in a thin sheet of water at baseflow. Scalping can also remove the gravel "pavement," leaving the finer subsurface particles vulnerable to entrainment (erosion) at lower flows. A related effect is that bar scalping lowers the overall elevation of the bar surface and may reduce the threshold water discharge at which sediment transport occurs. Salmon redds downstream are thus susceptible to deposition of displaced, surplus alluvial material, resulting in egg suffocation or suppressed salmon fry emergence, while redds upstream of scalped bars are vulnerable to regressive erosion. Gravel bar scalping also appears to reduce the amount of side channel areas, which can result in the reduction and/or displacement of juvenile salmonid fishes that use this habitat. Furthermore, scalping reduces stream sinuosity, retention of LWD and habitat complexity.

With regard to the Dooher Bar action, scalping will impact a 400-foot section of river. The development of sheet flow is not expected to appreciably impact river temperatures. Some transport of suspended solids are anticipated. Downstream deposition of these solids may impact chum spawning gravels, but no known OC coho salmon spawning is known to occur within the action area. The

existing stream channel is artificially confined by a levee, which limits the development of off-channel habitat. Gravel scalping will not alter this condition. Removal of the gravel bar functions to channelize the river within the subject reach. Channelization may increase flow velocities increasing erosion, reduce cover by decreasing the occurrence of LWD strandings, and impact the hydrologic cycle by increasing the delivery of stormwater runoff to estuarine waters. Inadvertently, increased delivery rates of stormwater to the estuary may magnify flood peaks and prove counterproductive to the stated purpose of the proposed action.

Based on the limited scope of the proposed action, the prior existence of an access road, and the retention of all existing riparian vegetation, NMFS expects the short-term impacts to be minimal, and are not expected to detrimentally affect the long-term condition of critical habitat within the watershed.

C. Cumulative Effects

Cumulative effects are defined in 50 CFR 402.02 as those effects of "future State or private activities, not involving Federal activities, that are reasonably certain to occur within the action area of the Federal action subject to consultation." Future Federal actions, including the ongoing operation of hydropower systems, hatcheries, fisheries, and land management activities are being, or have already been, reviewed through separate section 7 consultation processes. Therefore, these actions are not considered cumulative to the proposed action.

The NMFS is not aware of any specific future non-Federal activities within the action area that will cause greater impacts to listed species than presently occurs. The Kilchis Watershed Analysis indicated that logging activity is expected to resume in the near future in the Tillamook State Forest. The NMFS assumes that future private and state actions will continue at similar intensities as in recent years.

VI. CONCLUSION

After reviewing the current status of OC coho salmon, the environmental baseline for the action area, the effects of the proposed gravel removal action and the cumulative effects, it is the NMFS' biological opinion that the Dooher Bar Gravel Extraction and Bank Protection Project, as proposed, is not likely to jeopardize the continued existence of the OC coho salmon, and is not likely to destroy or adversely modify designated critical habitat. This finding is based, in part, on incorporation of BMPs into the proposed project design.

VII. CONSERVATION RECOMMENDATIONS

Section 7(a)(1) of the ESA directs Federal agencies to utilize their authorities to further the purposes of the ESA by carrying out conservation programs for the benefit of the threatened and endangered species. Conservation recommendations are discretionary agency activities to minimize or avoid adverse effects of a proposed action on listed species or critical habitat, to help implement recovery plans, or to develop information. NMFS has no additional conservation recommendations regarding the action addressed in this Opinion.

VIII. REINITIATION OF CONSULTATION

This concludes formal consultation on these actions in accordance with 50 CFR 402.14(b)(1). Reinitiation of consultation is required: (1) If the action is modified in a way that causes an effect on the listed species that was not previously considered in the biological assessment and this biological opinion; (2) new information or project monitoring reveals effects of the action that may affect the listed species in a way not previously considered; or (3) a new species is listed or critical habitat is designated that may be affected by the action (50 CFR 402.16).

IX. REFERENCES

Section 7(a)(2) of the ESA requires biological opinions to be based on the best scientific and commercial data available. This section identifies the data used in developing this Opinion.

Floyd, R. 2000. *ODOT Culvert Retrofit Research: Program analysis of fish passage through retrofitted culverts, Biological Assessment*. Oregon Department of Transportation, Salem, OR. May 25, 2000.

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X. INCIDENTAL TAKE STATEMENT

Section 9 of the ESA and Federal regulation pursuant to section 4(d) of the ESA prohibit the take of endangered species and threatened species, respectively, without special exemption. Take is defined as to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, collect, or attempt to engage in any such conduct. Harm is further defined by the NMFS to include significant habitat modification or degradation that results in death or injury to listed species by significantly impairing essential behavioral patterns, including breeding, feeding, and sheltering. Harass is defined by the NMFS as intentional or negligent actions that create the likelihood of injury to listed species to such an extent as to significantly alter normal behavior patterns which include, but are not limited to, breeding, feeding, and sheltering. Incidental take is defined as take that is incidental to, and not the purpose of, the carrying out of an otherwise lawful activity. Under the terms of Section 7(b)(4) and Section 7(o)(2), taking that is incidental to, and not intended as part of, the agency action is not considered to be prohibited taking under the ESA provided that such taking is in compliance with the term and conditions of this Incidental Take Statement.

A. Amount or Extent of Take

The NMFS anticipates that certain site-specific actions associated with gravel extraction and bank stabilization called for by the proposed action have more than a negligible likelihood of incidental take of OC coho salmon. Designated critical habitat for OC coho salmon may be adversely affected by project completion, but the negative effects are expected to be short-term. The potential for take has been substantially reduced through the application of the BMPs. Therefore, even though the NMFS expects some low level of incidental take to occur due to the action covered by this Opinion, the best scientific and commercial data available are not sufficient to enable NMFS to estimate a specific amount of incidental take to the species itself. In instances such as this, the NMFS designates the expected level of take as unquantifiable. Based on the information provided, NMFS anticipates that an unquantifiable but low level of incidental take can occur as a result of the action covered by this Opinion. In the accompanying Opinion, the NMFS determined that this level of anticipated take is not likely to result in jeopardy to the species or destruction or adverse modification of critical habitat.

B. Reasonable and Prudent Measures

The measures described below are non-discretionary, and must be undertaken by the Corps so that they become binding conditions of any grant or permit issued to the applicant(s), as appropriate, for the exemption on section 7(o)(2) to apply. The Corps has a continuing duty to regulate the activity covered by this incidental take statement. If the Corps: 1) Fails to assume and implement the terms and conditions; or 2) fails to require the applicant(s) to adhere to the terms and conditions of the incidental

take statement through enforceable terms that are added to the permit or grant document, the protective coverage of section 7(o)(2) may lapse. Activities that are not carried out consistent with the BMPs listed in the Opinion (Section II - Proposed Action) or reasonable and prudent measures presented below will require further consultation. In order to monitor the impact of incidental take, the Corps shall report the progress of the action and its impact on the species to the NMFS as specified in the incidental take statement 50 CFR 402.14(i)(3).

The NMFS believes that the following reasonable and prudent measures are necessary and appropriate to minimize impacts of incidental take of OC coho salmon from completion of the Dooher Bar Gravel Extraction and Bank Stabilization Project.

The Corps shall:

1. Minimize the likelihood of incidental take from construction activities in or near watercourses by implementing pollution and erosion control measures.

2. Minimize the likelihood of incidental take associated with impacts to riparian and in-stream habitats by avoiding or replacing lost riparian and in-stream functions.

3. Minimize the likelihood of incidental take associated with in-stream work by restricting work to recommended in-water work periods.

4. Monitor the effectiveness of the proposed action in achieving the stated purpose and the effectiveness of conservation measures in minimizing incidental take and report annually to NMFS.

C. Terms and Conditions

In order to be exempt from the prohibitions of section 9 of the Act, the Corps must comply with the following terms and conditions, which implement the reasonable and prudent measures described above. These terms and conditions are non-discretionary.

1. To Implement Reasonable and Prudent Measure #1, above, the Corps shall ensure that:

    a. Construction activities meet or exceed all requirements of the Oregon Department of Environmental Quality for the National Pollutant Discharge Elimination System (NPDES) 1200-CA permit.

    b. A Pollution Control Plan (PCP) is developed to prevent point-source pollution related to construction operations that satisfies all pertinent requirements of Federal, State and Local laws and regulations, and the requirements of these conservation measures. The PCP will include the following:

        i. A description of methods to be used to prevent erosion and sedimentation that covers sites, borrow pit operations, haul roads, equipment storage sites, fueling operations and staging areas;

ii. a description of the hazardous products or materials that will be used, including inventorying, storage, handling, and monitoring; and

iii. a spill containment and control plan with notification procedures; specific clean up and disposal instructions for different products; quick response containment and clean up measures which will be available on site; proposed methods for disposal of spilled materials; and employee training for spill containment.

c. Vehicles operated within 150 feet of the two-year floodplain are free of fluid leaks. Vehicles will be examined daily for leaks.

d. Vehicle staging, maintenance, refueling, and fuel storage areas, will be at least 150 feet from the 2-year flood elevation, or other NMFS approved site (i.e., isolated from active channel by a levee or dike).

e. At the end of each work shift, vehicles will be stored no less than 150 feet (horizontal distance) from the two-year flood elevation or other NMFS approved site (i.e., isolated from active channel by a levee or dike).

f. No pollutants of any kind (i.e., petroleum products) will come in contact with the area below the ordinary high water mark (two-year flood elevation).

g. No surface application of fertilizer will occur within 50 feet of any stream channel as part of this permitted action.

h. No herbicide or pesticide application will occur within 150 feet of any stream channel as part of this permitted action. Mechanical removal of undesired vegetation and root nodes is permitted.

i. Temporary erosion and sediment controls will be used on all exposed slopes during any hiatus in work exceeding 7 days.

j. Exposed soil surfaces will be permanently stabilized at finished grade with native grass seeding and mulch.

2. To implement Reasonable and Prudent Measure #2, above, the Corps shall ensure that:

a. Gravel removal completed under this consultation is authorized for the year 2000 only.

b. Material removed during excavation will only be placed in locations where it cannot enter sensitive aquatic resources.

c. Alteration or disturbance of the stream banks and existing riparian vegetation will be minimized to the greatest extent possible.

d. No existing trees within 150 feet of the edge of bank will be removed.

e. Live local-stock willow stakes and posts are used in areas to be planted with willows.

f. All plantings will occur prior to April 15, 2001. No plantings will take place outside this period without prior written authorization from the Corps, in consultation with ODFW and NMFS.

g. Any woody debris located during excavation will be re-deposited onsite (no translocation will be allowed).

3. To implement Reasonable and Prudent Measure #3, above, the Corps shall ensure that:

a. The applicant will arrange a pre-work meeting with ODFW (Chris Knutsen, 503-842-2741) and the contractor prior to commencement of project activities.

b. Work conducted outside the stated work period (August 15 to September 30) will not occur without prior written authorization from the COE, in consultation with ODFW and NMFS.

4. To Implement Reasonable and Prudent Measure #4, above, the Corps shall ensure that:

a. A report describing the success of conservation measures and project design be provided to the NMFS. This report will include an evaluation of bank stabilization, revegetation, and gravel removal; and will be submitted as outlined below.

b. *Bank Stabilization and Revegetation*. This component of the monitoring report will be provided by December 31, 2003, or three years following project completion, whichever is later. The report will include:

i. Complete photo-documentation of pre- and post-bank stabilization efforts from at least two-fixed points. Post-project photographs will be taken and submitted each summer by October 1;

ii. An evaluation of the effectiveness of bank stabilization measures;

iii. A description of actions taken to ensure that plantings were done correctly and success at meeting the objective of 80 percent or higher survival rate after three years; and

iv. Supporting photo-documentation of pre and post-revegetation from at least two fixed points will be taken and submitted annually by October 1.

c. *Results of Gravel Removal*. The report on the gravel removal component of monitoring will be provided by October 31, 2001, or within one year of project completion, whichever is later. The report will include:

i. A final estimate of the total volume of gravel removed, including the days and hours excavation took place;

ii. A description of specific methods used to minimize turbidity and their effectiveness, including the degree and extent of any observed turbidity plume;

iii. Any injury or mortality of fish resulting from project activities;

iv. Completion of three cross-sectional surveys (pre-excavation, post-excavation, and summer 2001) consisting of transects commencing 100-feet upstream and concluding 100-feet downstream of the work site. Transects shall not exceed 100 feet spacing, and in no case shall there be fewer than six. Each survey shall replicate previous survey transect locations;

v. Photo-documentation of the bar before and after excavation from at least two fixed points. Post-excavation photographs should include at a minimum of one photo immediately following the action and one during the following summer;

vi. Documentation of any flood events subsequently occurring onsite; and

vii. Any observations of bank instability occurring within 100 feet of the action site.

d. Monitoring reports will be submitted to:

Oregon Branch Chief
National Marine Fisheries Service
525 NE Oregon Street, #500
Portland, Oregon 97232-2737

e. If a dead, sick or injured OC coho salmon is located, immediate notification must be made to Rob Markle, NMFS, telephone: (503) 230-5419, or Chris Knutsen, ODFW, telephone: (503) 842-2741. Care will be taken in handling sick or injured specimens to ensure effective treatment and care or the handling of dead specimens to preserve biological material in the best possible state for later analysis of cause of death. In conjunction with the care of sick or injured species or preservation of biological material from a dead animal, the finder has the responsibility to carry out instruction provided by Law Enforcement to ensure that evidence intrinsic to the specimen is not unnecessarily disturbed.